

### **REMARKS**

Claims 1-23 are rejected. Claims 23-36 are withdrawn from consideration. Claim 1 has been amended. New Claim 37 has been added. Claims 1-23, and 37 are presently pending in the application, with Claims 23-36 withdrawn. Favorable reconsideration of the application in view of the following remarks is respectfully requested.

The basis for the amendment of Claim 1 is found on page 3, lines 9-10 of the specification as originally filed. The basis for new Claim 37 is original Claim 1 and page 3, lines 9-10 of the specification as originally filed.

#### **Restriction Requirement:**

The Examiner has required restriction under 35 U.S.C. 121 to Group I (Claims 1-22, drawn to an ink recording element, classified in class 428, subclass 32.24) or Group II.(Claims 23-36, drawn to a method of printing, classified in class 347, subclass 106), since the product of Group I can be used in a materially different method than the method of Group II, such as a method of printing with an ink pen.

The Applicant confirms the telephone election of October 22, 2003 in which a provisional election was made with traverse to prosecute the invention of group I, claims 1-22. As stated by the Examiner, Group I, Claims 1-22, are limited to an ink recording element and Group II, claims 23-36, are drawn to a method of printing. However, both independent claims claim a support having thereon a hydrophilic absorbing layer and a laminate adhesion promoting absorbing hydrophilic overcoat polymer layer comprising a derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings. Therefore, it is suggested that commonality exists among the Groups identified by the Examiner with respect to the hydrophilic absorbing layer and the laminate adhesion promoting absorbing hydrophilic overcoat polymer layer comprising a derivatized poly(vinyl alcohol). Coextensive searching of the Groups would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered and withdrawn and that all claims now pending be examined.

#### **Rejection Of Claims 1-3, 7-15 and 19-22 Under 35 U.S.C. §103(a):**

The Examiner has rejected Claims 1-3, 7-15 and 19-22 under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. (5,478,631), since

Kawano et al. disclose an ink jet recording element having a support and top and bottom hydrophilic absorbing layers on its surface in which both top and bottom layer is formed from an aqueous composition including amphoteric latex, water-soluble polymer and pigment, as water-soluble polymers, the reference discloses one or more of a group including acetoacetylated polyvinyl alcohol, polyvinyl pyrrolidone, and gelatin, the layers may also contain vinyl latexes and polyurethane resin, layer weight per area as opposed to layer thicknesses, the bottom layer may be further divided to form an intermediate layer and a lowest layer, and the ink receptive layers may contain a dye-fixing agent, i.e. mordant. The Examiner indicates that, since the reference states that the group of binders including polyurethane may be used "as far as the effects of the present invention are not lost," it would have been obvious to one of ordinary skill in the art to use less of these binders than of the water-soluble high polymer, a required component in each layer and, consequently, the ratio of polyurethane to polyvinyl alcohol instantly claimed would have been obvious to one of ordinary skill in the art and it also would have been obvious to one of ordinary skill in the art to determine thicknesses of the layers based upon the coating weights disclosed by the reference and the performance of the medium in areas of surface strength, bleeding and thinning, color reproduction, and water resistance, i.e. the properties identified by Kawano et al.

Kawano relates to an ink jet recording sheet comprising a substrate and an ink receptive layer disposed on said substrate, said ink receptive layer containing a pigment and a binder as its main components, the improvement comprising said ink receptive layer being an aqueous composition containing a pigment and an amphoteric latex as its main components, which absorbs water-base ink well, gives high-grade images, and ensures excellent water resistance of printed images. Kawano fails to disclose difficulties with laminate adhesion and fails to disclose the use of a laminate adhesion promoting overcoat layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings.

The present invention comprises an ink recording element comprising a support having a hydrophilic absorbing layer and a laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by

ether or ester groupings which provides better laminate adhesion than the elements of the prior art, while maintaining other properties such as excellent image quality, no banding, bleeding, coalescence, or cracking in inked areas, absorption of large amounts of ink, quick drying to avoid blocking, high optical densities in the printed areas, freedom from differential gloss and high levels of image fastness.

To establish a prima facie case of obviousness requires, first, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references (or references when combines) must teach or suggest all the claim limitations. Kawano fails to teach, disclose or suggest a laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings which provides better laminate adhesion. Kawano also fails to mention the property of laminate adhesion. Therefore, the reference fails to provide any motivation to modify the reference to produce the laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) which provides better laminate adhesion as presently claimed. The reference also fails to provide any likelihood of obtaining improved laminate adhesion by using a derivatized poly (vinyl alcohol) as presently claimed. Finally, since the reference fails to mention laminate adhesion or the use of derivatized poly (vinyl alcohol) in an overcoat layer to improve laminate adhesion, the reference fails to teach, disclose or suggest the limitations of the invention as presently claimed.

Even assuming a prima facie case of obviousness has been made, the present invention provides surprising results. Kawano teaches the use of poly(vinyl alcohol) (col. 6, lines 1-15) which cannot be used alone, but must be utilized with an amphoteric latex (col. 6, lines 26-33). Kawano also indicates in col. 4, lines 51-58, that PVA and modified PVA, when used alone as binders, provide inferior surface strength and water resistance. The present invention, Example 1, which has an overcoat containing derivatized PVA demonstrates excellent laminate adhesion (Table 2, page 18) as compared to Example 5, having

an overcoat layer containing non-derivatized PVA, as well as Example 6, having an overcoat containing PVA and polyethyleneoxide copolymer.

Therefore, since the reference fails to provide any suggestion or motivation to modify the reference, fails to provide a reasonable expectation of success, fails to teach or suggest all the claim limitations, and in the light of surprising results, the Applicants respectfully request the Examiner to reconsider and withdraw the rejection.

**Rejection Of Claims 1, 2, 4-6 Under 35 U.S.C. §103(a):**

Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. as applied to claims 1-3, 7-15 and 19-22 above, and further in view of Tomizawa et al. (6,224,971). The secondary reference discloses an ink jet recording sheet including acetoacetylated polyvinyl alcohol. The primary reference does not disclose the properties of the disclosed acetoacetylated polyvinyl alcohol used therein, therefore, it is appropriate to look elsewhere in the same art area for a particular acetoacetylated polyvinyl alcohol to use in the invention of the primary reference. Tomizawa et al. disclose an acetoacetylated polyvinyl alcohol with properties as recited by the instant claims (see col. 2, lines 46-67) although the reference is silent with respect to molecular weight. Both applicant and the secondary reference use a commercially available product from the Gohsefimer Z200 series of Nippon Gohsei Kagaku Kogyo Co. The Examiner was unable to determine the molecular weights of each of these polymers. However, they are in the same commercial series of the same company, and have the same degree of saponification and substitution. Therefore, it would have been obvious to one of ordinary skill in the art to determine the particular polyvinyl alcohol from the commercially available series of polymers identified by the prior art as useful in ink jet recording media applications in order to achieve the goals set forth by the primary reference.

Kawano relates to an ink jet recording sheet comprising a substrate and an ink receptive layer disposed on said substrate, said ink receptive layer containing a pigment and a binder as its main components, the improvement comprising said ink receptive layer being an aqueous composition containing a pigment and an amphoteric latex as its main components, which absorbs water-base ink well, gives high-grade images, and ensures excellent water resistance of printed images. Kawano fails to disclose difficulties with laminate adhesion and

fails to disclose the use of a laminate adhesion promoting overcoat layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings.

Tomizawa discloses novel ink-jet recording sheets having high water resistance, excellent transparency of the ink-receptive layer, ink absorptivity and color developability as well as the advantages of absence of surface tackiness and blocking and a liquid coating composition for forming the ink-receptive coating layer of the recording sheet. The liquid coating composition comprises, as a uniform blend in an aqueous medium, an acetoacetylated polyvinyl alcohol, a polyvinylpyrrolidone resin, and an acidic aqueous dispersion of a colloidal silica, each in a specified weight proportion. Tomizawa fails to disclose laminate adhesion or the use of a laminate adhesion promoting overcoat layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings.

The present invention comprises an ink recording element comprising a support having a hydrophilic absorbing layer and a laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings which provides better laminate adhesion than the elements of the prior art, while maintaining other properties such as excellent image quality, no banding, bleeding, coalescence, or cracking in inked areas, absorption of large amounts of ink, quick drying to avoid blocking, high optical densities in the printed areas, freedom from differential gloss and high levels of image fastness.

To establish a prima facie case of obviousness requires, first, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references (or references when combines) must teach or suggest all the claim limitations. Kawano and Tomizawa fail to teach, disclose or suggest a laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings which provides better laminate adhesion. Tomizawa and Kawano also fail to

mention the property of laminate adhesion. Therefore, the references fail to provide any motivation to modify the reference to produce the laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) which provides better laminate adhesion as presently claimed. The Examiner notes that it would have been obvious to one of ordinary skill in the art to determine the particular polyvinyl alcohol from the commercially available series of polymers identified by the prior art as useful in ink jet recording media applications in order to achieve the goals set forth by the primary reference. However, Kawano fails to teach the goal of improved laminate adhesion. The references also fail to provide any likelihood of obtaining improved laminate adhesion by using a derivatized poly (vinyl alcohol) as presently claimed. Finally, since the references fail to mention laminate adhesion or the use of derivatized poly (vinyl alcohol) in an overcoat layer to improve laminate adhesion, the reference fails to teach, disclose or suggest the limitations of the invention as presently claimed.

Also, as discussed above, the present invention provides evidence of surprising results.

Therefore, since the references fail to suggest or motivate one to modify or combine the references, fail to provide a reasonable expectation of success, fail to teach or suggest all the claim limitations, and in the light of surprising results, the Applicants respectfully request the Examiner to reconsider and withdraw the rejection.

**Rejection Of Claims 1 and 15-18 Under 35 U.S.C. §103(a):**

Claims 1 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. as applied to claims 1-3, 7-15, 19-22 above, and further in view of Ueda et al. (EP 791,475). As with the polyvinyl alcohol, the primary reference is also silent with respect to particular gelatin that may be used. Therefore, Ueda et al. is cited for teaching of gelatin that is used in the ink jet recording art (see page 3). The secondary reference teaches that gelatins may be pigskin, cow skin, or cow bone, and may be lime-processed, acid processed, or gelatin derivatives. Based upon this teaching it would have been obvious to one of ordinary skill in the art to use a gelatin previously taught for use in ink jet recording media as the gelatin of the primary reference.

Kawano relates to an ink jet recording sheet comprising a substrate and an ink receptive layer disposed on said substrate, said ink receptive layer containing a pigment and a binder as its main components, the improvement comprising said ink receptive layer being an aqueous composition containing a pigment and an amphoteric latex as its main components, which absorbs water-base ink well, gives high-grade images, and ensures excellent water resistance of printed images. Kawano fails to disclose difficulties with laminate adhesion and fails to disclose the use of a laminate adhesion promoting overcoat layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings.

Ueda discloses a recording sheet for ink-jet recording, which comprises a support, and provided thereon, an ink receiving layer, wherein the ink receiving layer contains a water soluble polymer, a polymer latex and gelatin, to provide an excellent image under various conditions and an excellent transportability. Ueda fails to disclose laminate adhesion as a problem, and fails to disclose the use of derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings in the overcoat layer to produce improved adhesion.

To establish a prima facie case of obviousness requires, first, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references (or references when combines) must teach or suggest all the claim limitations. Kawano and Ueda fail to teach, disclose or suggest a laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) having at least one hydroxyl group replaced by ether or ester groupings which provides better laminate adhesion. Ueda and Kawano also fail to mention the property of laminate adhesion. Therefore, the references fail to provide any motivation to modify the reference to produce the laminate adhesion promoting absorbing hydrophilic overcoat polymer layer containing derivatized poly(vinyl alcohol) which provides better laminate adhesion as presently claimed. The references also fail to provide any likelihood of obtaining improved laminate adhesion by using a derivatized poly (vinyl alcohol) as presently claimed. Finally, since the

references fail to mention laminate adhesion or the use of derivatized poly (vinyl alcohol) in an overcoat layer to improve laminate adhesion, the reference fails to teach, disclose or suggest the limitations of the invention as presently claimed.


Also, as discussed above, the present invention provides evidence of surprising results.

Therefore, since the references fail to suggest or motivate one to modify or combine the references, fail to provide a reasonable expectation of success, fail to teach or suggest all the claim limitations, and in the light of surprising results, the Applicants respectfully request the Examiner to reconsider and withdraw the rejection.

The Examiner indicates that a copy of EP 1110745 was not included in the file. The Applicants have enclosed a copy so that the reference may be fully considered.

It is believed that the foregoing is a complete response to the Office Action and that the claims are in condition for allowance. Favorable reconsideration and early passage to issue is therefore earnestly solicited.

Respectfully submitted,

  
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Enclosure: copy EP 1110745 A2